Appendix G-4

Operational Modeling Results

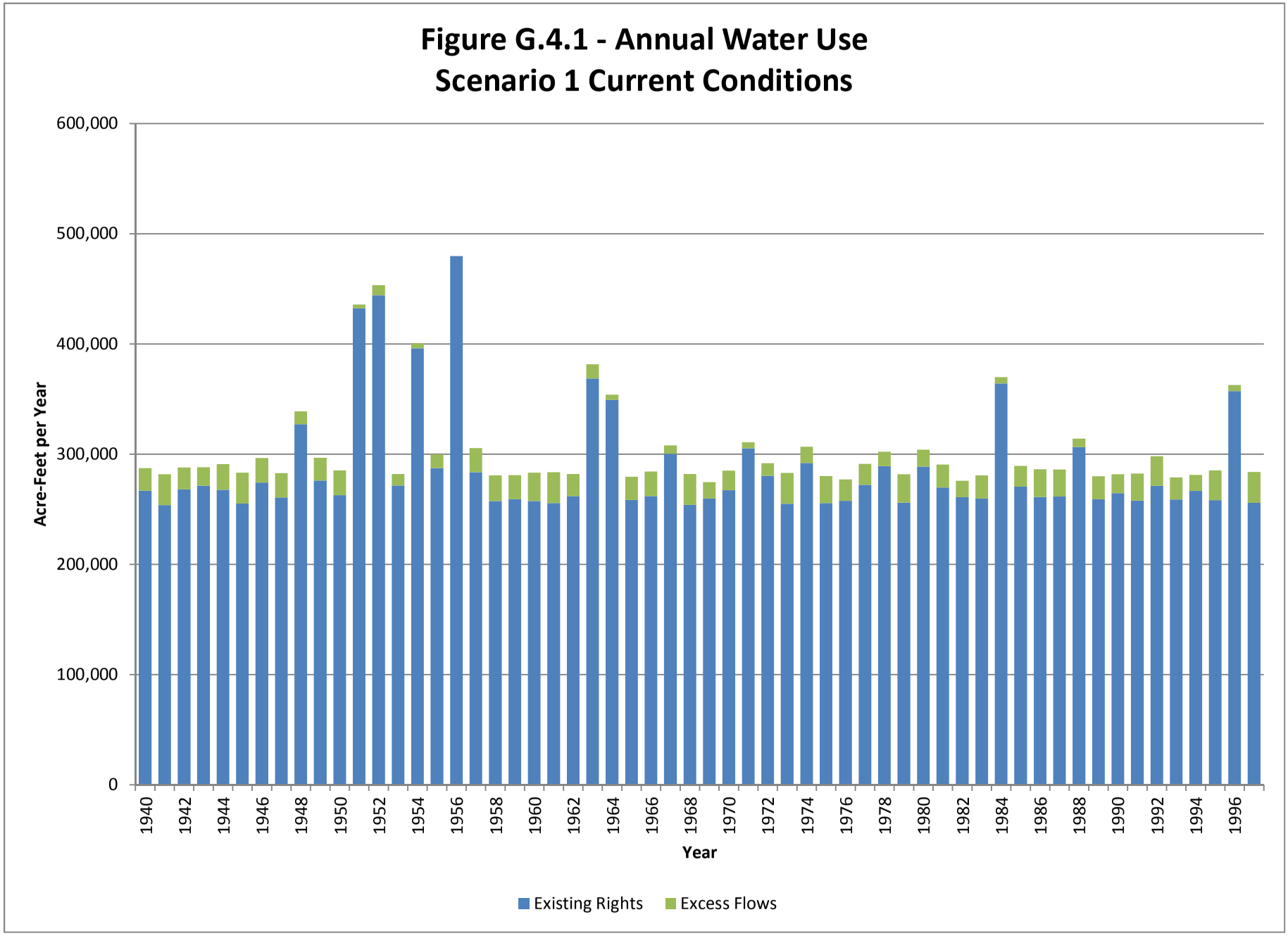
Figure G.4.1 - Annual Water Use
Scenario 1 Current Conditions
600,000
500,000
400,000
300,000
200,000
100,000
0
Acre-Feet per Year
1940
1942
1944
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
Year
Existing Rights
Excess Flows

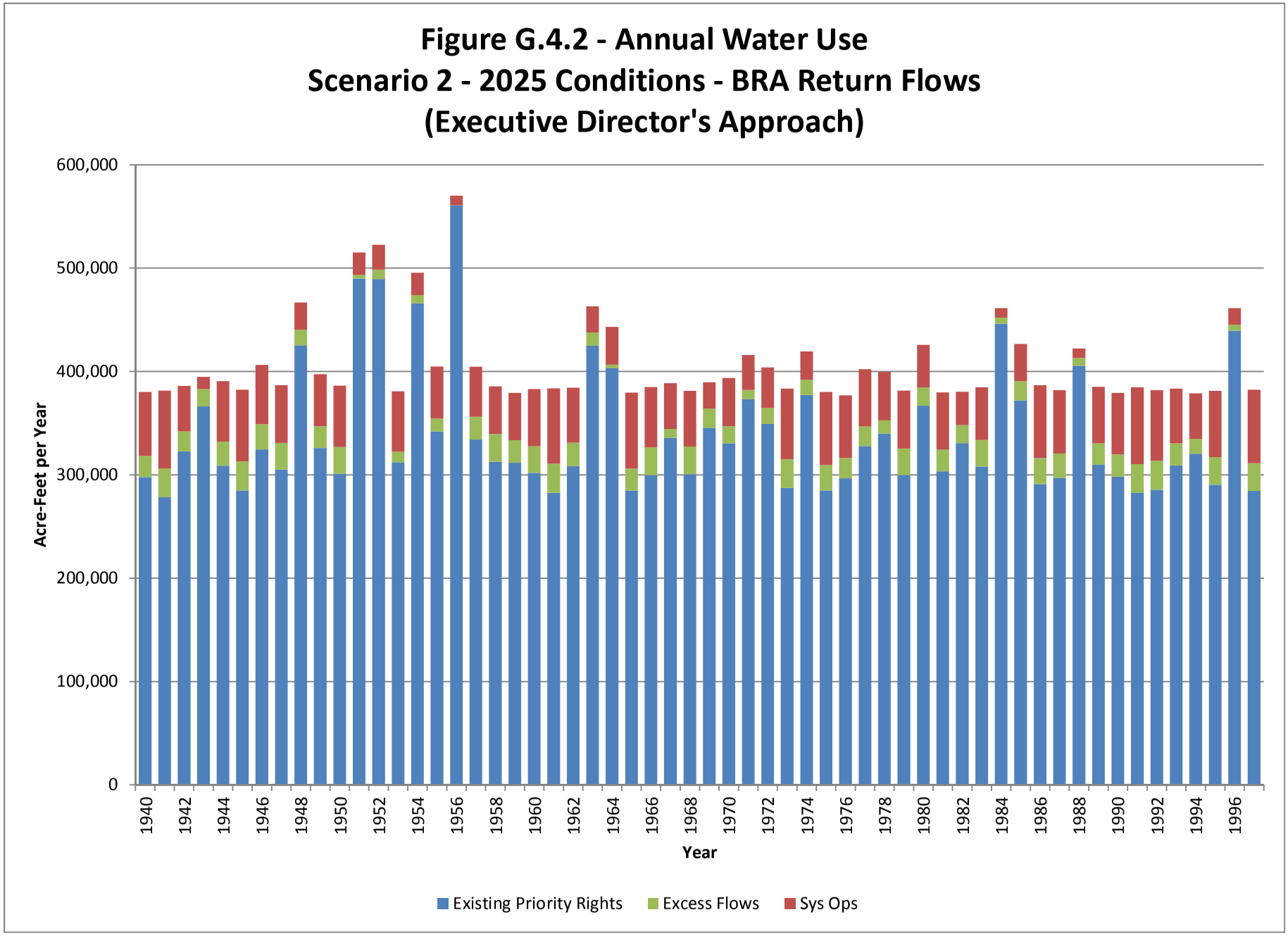
Figure G.4.2 - Annual Water Use
Scenario 2 - 2025 Conditions - BRA Return Flows
(Executive Director's Approach)
600,000
500,000
400,000
300,000
200,000
100,000
0
Acre-Feet per Year
1940
1942
1944
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
Year
Existing Priority Rights
Excess Flows
Sys Ops

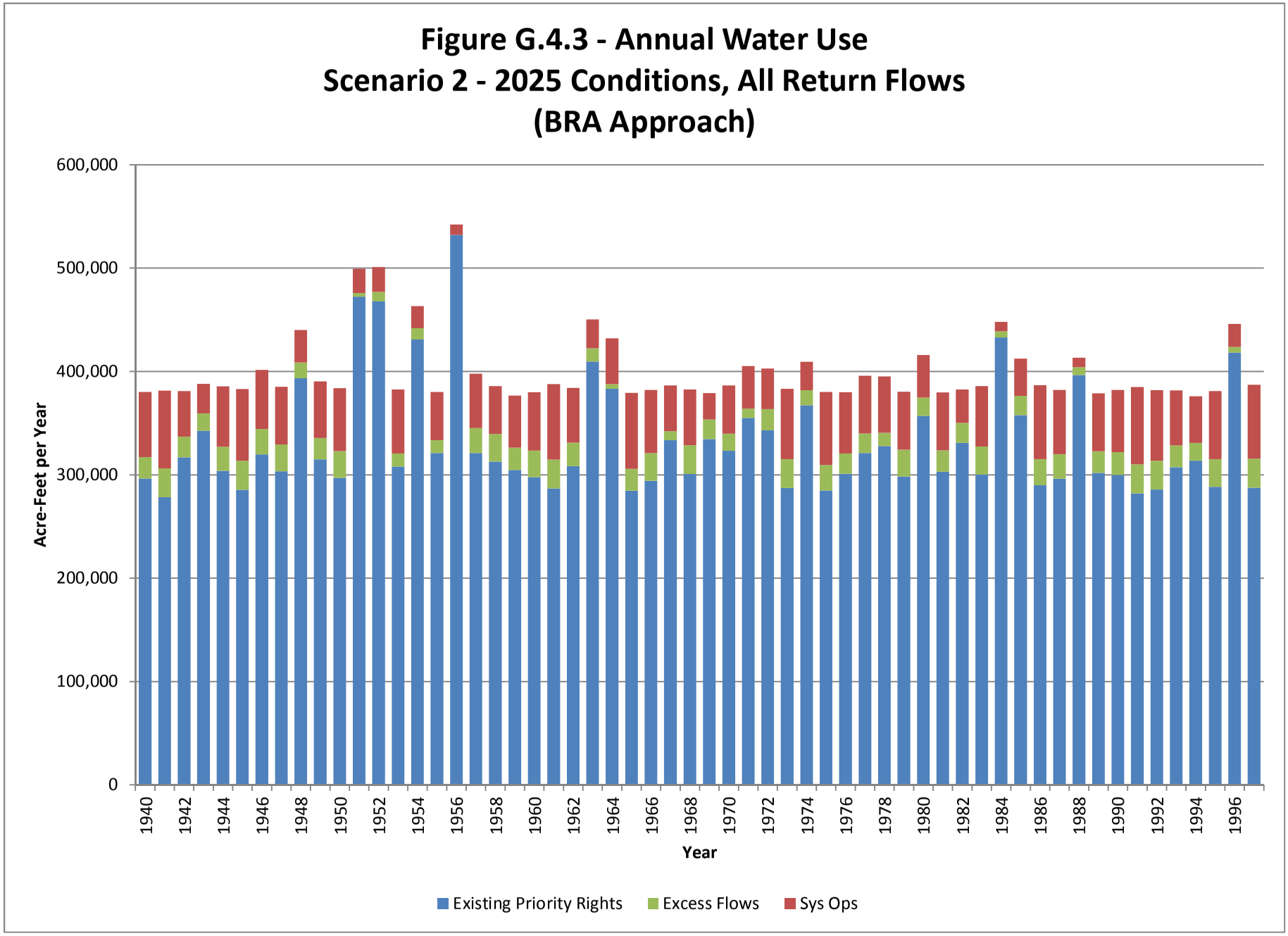
Figure G.4.3 - Annual Water Use
Scenario 2 - 2025 Conditions, All Return Flows
(BRA Approach)
600,000
500,000
400,000
300,000
200,000
100,000
0
Acre-Feet per Year
1940
1942
1944
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
Year
Existing Priority Rights
Excess Flows
Sys Ops

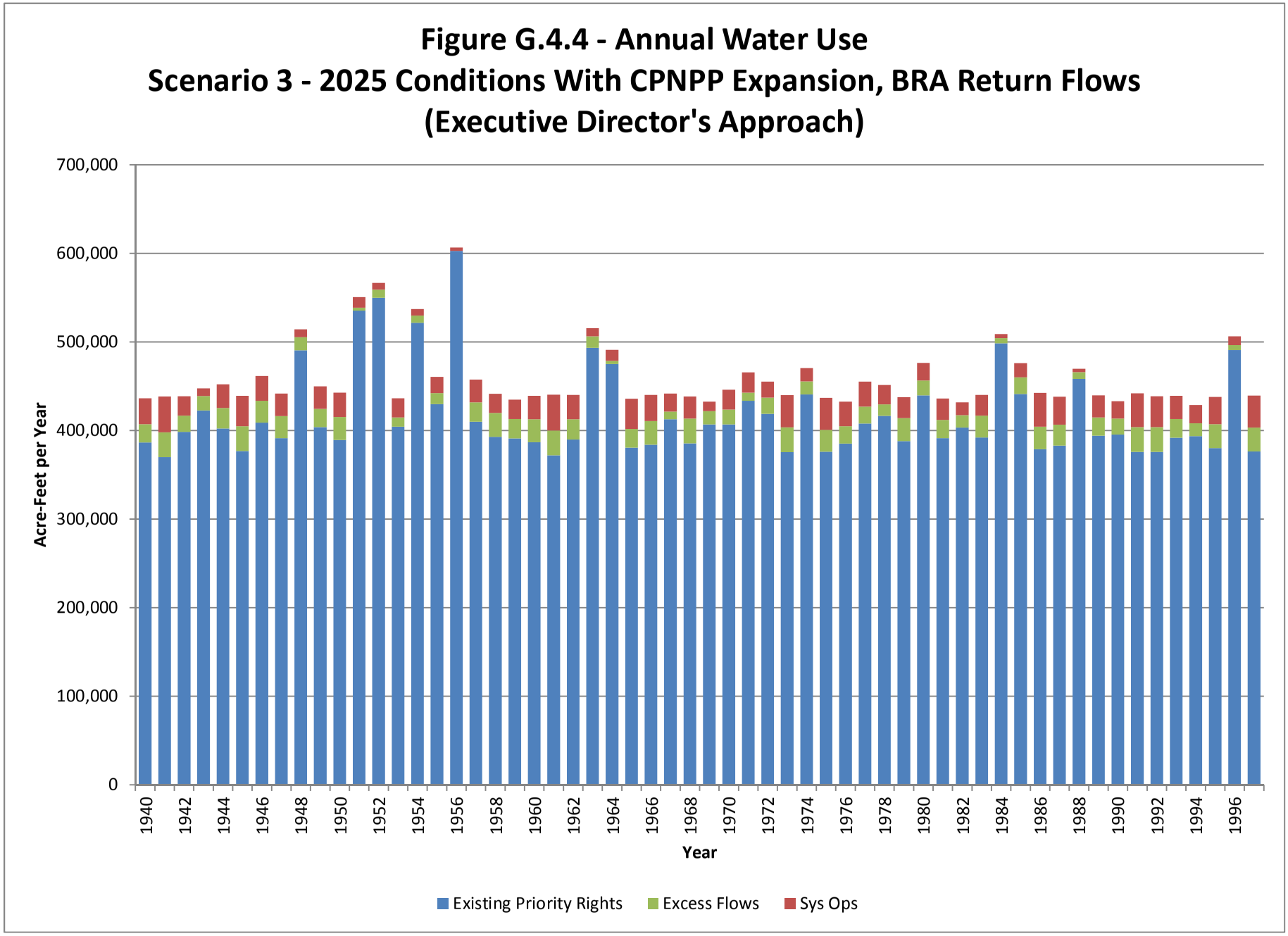
Figure G.4.4 - Annual Water Use
Scenario 3 - 2025 Conditions With CPNPP Expansion, BRA Return Flows
(Executive Director's Approach)
Acre-Feet per Year
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1940
1942
1944
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
Year
Existing Priority Rights
Excess Flows
Sys Ops

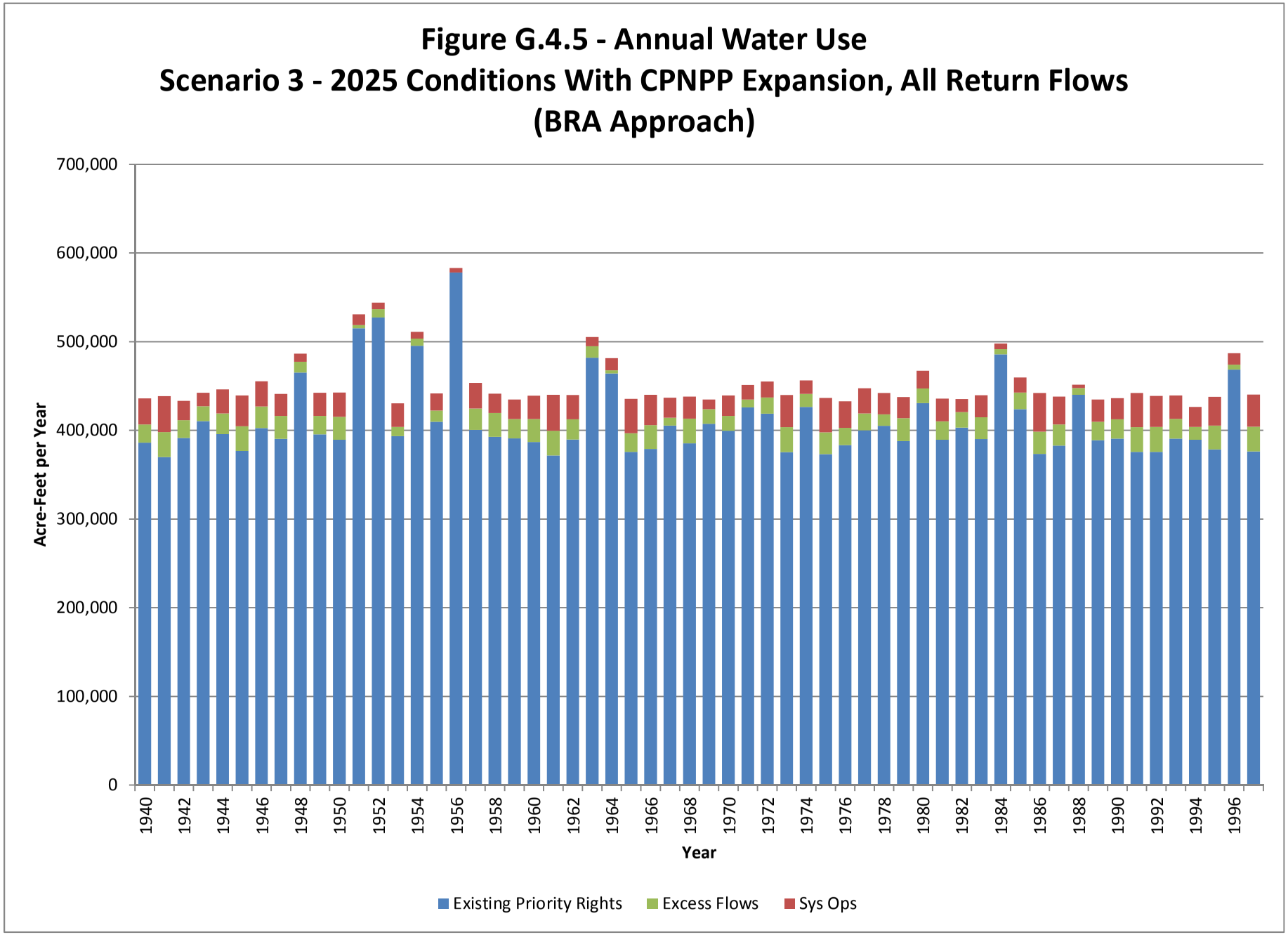
Figure G.4.5 - Annual Water Use
Scenario 3 - 2025 Conditions With CPNPP Expansion, All Return Flows
(BRA Approach)
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Acre-Feet per Year
1940
1942
1944
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
Year
Existing Priority Rights
Excess Flows
Sys Ops

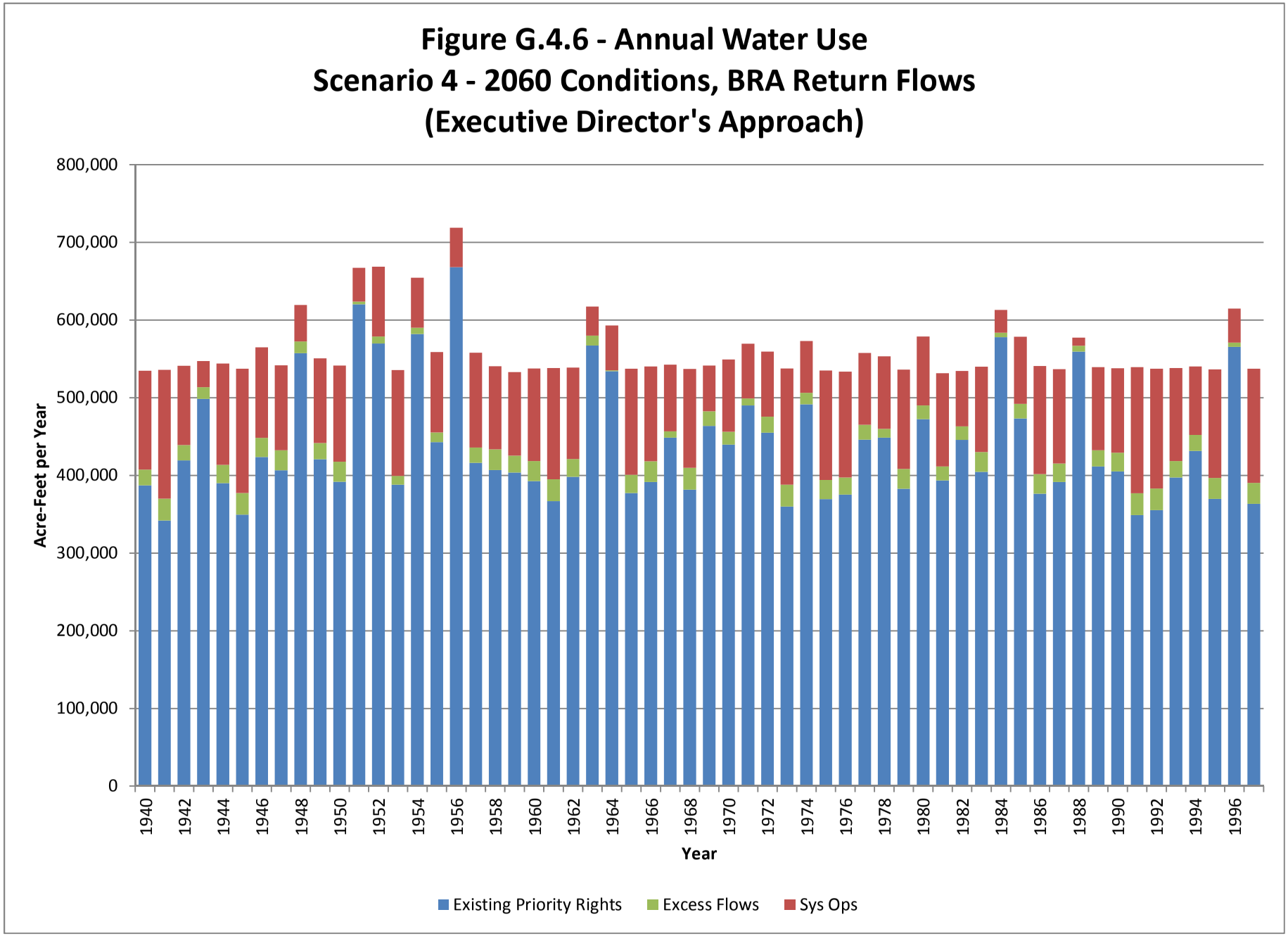
Figure G.4.6 - Annual Water Use
Scenario 4 - 2060 Conditions, BRA Return Flows
(Executive Director's Approach)
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Acre-Feet per Year
1940
1942
1944
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
Year
Existing Priority Rights
Excess Flows
Sys Ops

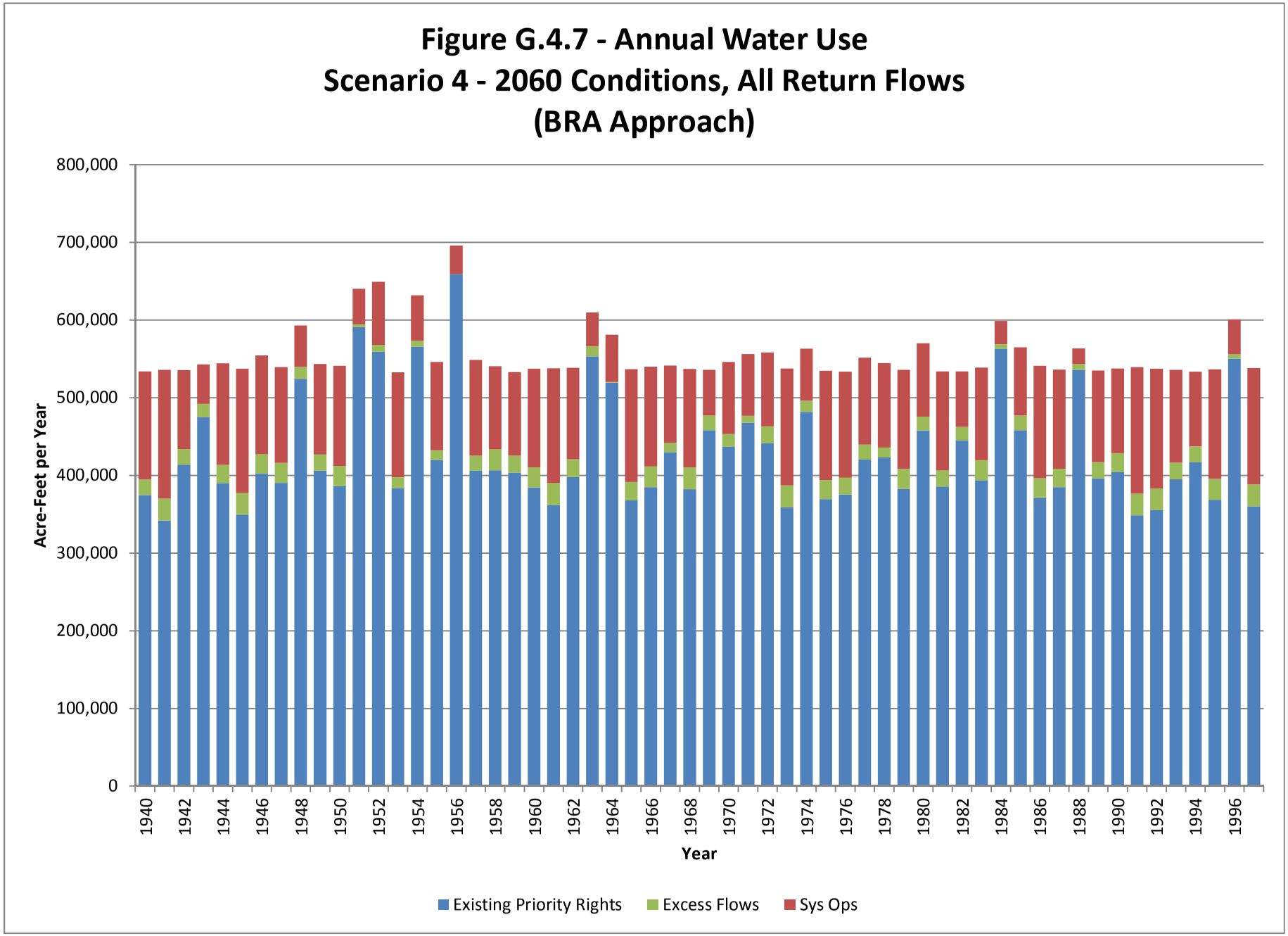
Figure G.4.7 - Annual Water Use
Scenario 4 - 2060 Conditions, All Return Flows
(BRA Approach)
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Acre-Feet per Year
1940
1942
1944
1946
1948
1950
1952
1954
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
Year
Existing Priority Rights
Excess Flows
Sys Ops

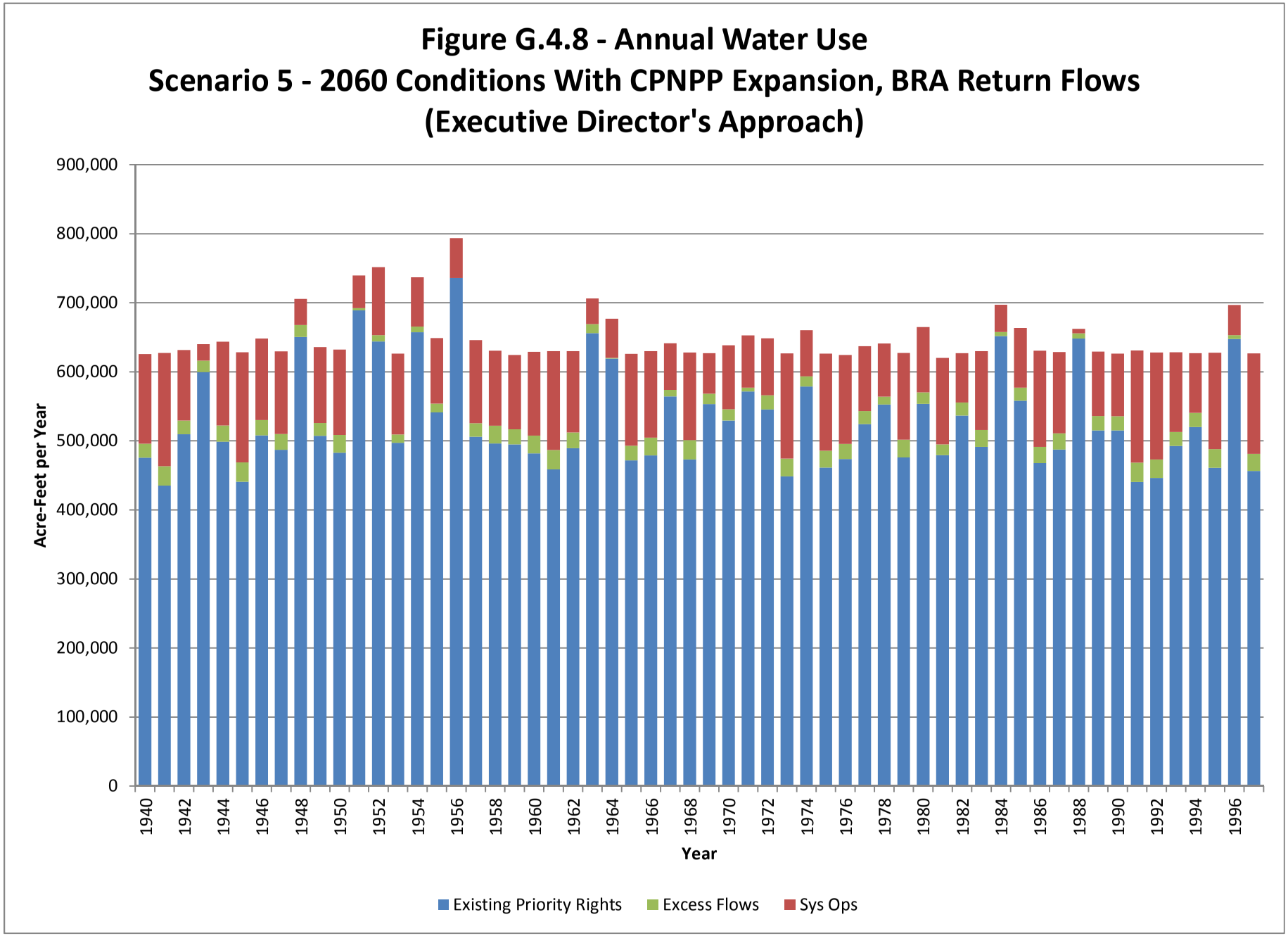
Figure G.4.8 - Annual Water Use
Scenario 5 - 2060 Conditions With CPNPP Expansion, BRA Return Flows
(Executive Director's Approach)
Acre-Feet per Year
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1940
1942
1944
1946
1948
1950
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1990
1992
1994
1996
Year
Existing Priority Rights
Excess Flows
Sys Ops

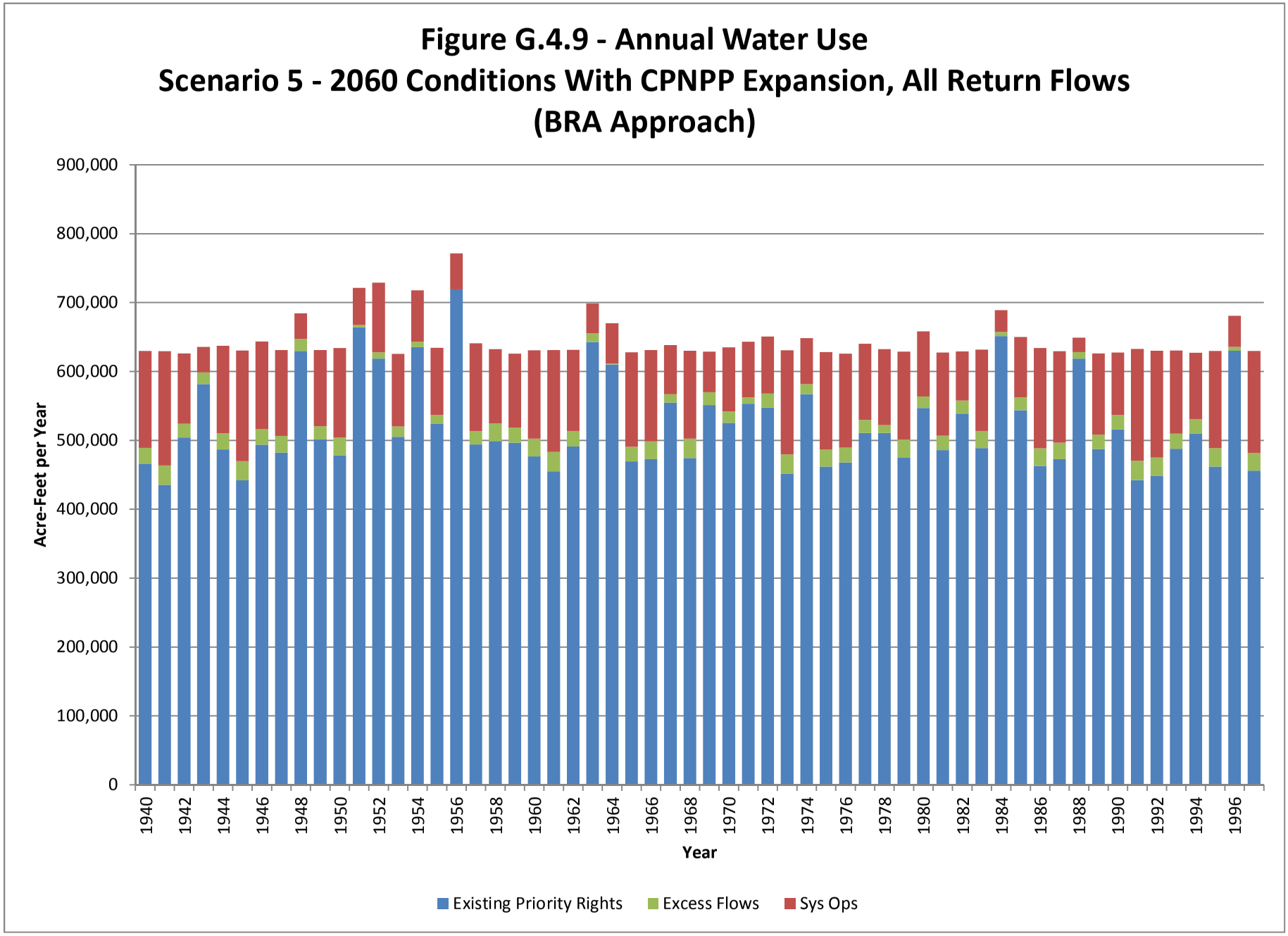
Figure G.4.9 - Annual Water Use
Scenario 5 - 2060 Conditions With CPNPP Expansion, All Return Flows
(BRA Approach)
Acre-Feet per Year
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1940
1942
1944
1946
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1994
1996
Year
Existing Priority Rights
Excess Flows
Sys Ops

Table G.4.1 - Brazos at Glen Rose Flow Statistics Values in acft/month									
Statistic	Scenario 1 - Current	Scenario 2 - 2025 All Return Flow	Scenario 2 - 2025 BRA Return Flow	Scenario 3 - 2025 w CPNPP All Return Flow	Scenario 3 - 2025 w CPNPP BRA Return Flow	Scenario 4 - 2060 All Return Flow	Scenario 4 - 2060 BRA Return Flow	Scenario 5 - 2060 w CPNPP All Return Flow	Scenario 5 - 2060 w CPNPP BRA Return Flow
Min	0	0	0	1,207	1,124	0	0	1,206	1,123
5%	855	1,072	757	2,625	2,614	1,290	1,149	2,612	2,604
15%	1,614	2,093	1,983	3,340	3,321	2,133	2,045	3,324	3,249
30%	2,443	3,566	3,187	4,674	4,564	3,793	3,348	4,417	4,351
Median	12,724	15,114	14,805	12,063	11,690	14,946	15,063	12,378	12,453
70%	44,736	50,792	49,013	40,268	39,283	49,522	47,172	40,352	39,627
85%	128,857	129,431	127,988	117,868	116,515	128,866	127,107	119,109	118,184
Max	2,554,871	2,522,858	2,522,060	2,517,978	2,517,215	2,522,004	2,521,189	2,517,098	2,516,336

Table G.4.2 - Brazos nr Highbank Flow Statistics Values in acft/month									
Statistic	Scenario 1 - Current	Scenario 2 - 2025 All Return Flow	Scenario 2 - 2025 BRA Return Flow	Scenario 3 - 2025 w CPNPP All Return Flow	Scenario 3 - 2025 w CPNPP BRA Return Flow	Scenario 4 - 2060 All Return Flow	Scenario 4 - 2060 BRA Return Flow	Scenario 5 - 2060 w CPNPP All Return Flow	Scenario 5 - 2060 w CPNPP BRA Return Flow
Min	132	164	196	1,325	1,454	828	638	676	1,454
5%	6,684	7,382	7,364	7,842	8,200	7,262	7,392	8,151	8,773
15%	18,838	16,221	15,413	15,440	14,491	15,441	15,123	14,584	14,872
30%	34,353	35,541	33,963	34,318	33,884	34,454	33,951	32,297	32,416
Median	73,071	80,446	79,454	76,566	75,518	78,370	78,540	76,183	75,847
70%	125,484	144,706	144,389	136,295	135,383	144,693	143,787	136,935	135,991
85%	261,316	274,790	273,956	274,790	272,358	273,503	270,433	274,517	271,103
Max	3,393,384	3,384,317	3,381,251	3,379,242	3,376,607	3,382,680	3,380,029	3,378,025	3,375,389

Table G.4.3 - Brazos at Richmond Flow Statistics Values in acft/month									
Statistic	Scenario 1 - Current	Scenario 2 - 2025 All Return Flow	Scenario 2 - 2025 BRA Return Flow	Scenario 3 - 2025 w CPNPP All Return Flow	Scenario 3 - 2025 w CPNPP BRA Return Flow	Scenario 4 - 2060 All Return Flow	Scenario 4 - 2060 BRA Return Flow	Scenario 5 - 2060 w CPNPP All Return Flow	Scenario 5 - 2060 w CPNPP BRA Return Flow
Min	27,540	31,700	31,760	30,714	31,188	36,674	38,078	37,008	39,154
5%	44,675	47,183	46,195	45,130	45,330	52,470	52,317	54,395	53,514
15%	67,166	73,813	69,988	68,839	66,494	76,367	73,083	73,643	72,315
30%	101,636	115,397	111,564	112,702	108,230	113,263	105,684	109,596	102,971
Median	187,521	201,843	197,822	198,896	189,906	199,148	194,774	192,980	190,967
70%	416,053	440,612	429,149	440,057	432,797	430,287	421,956	425,898	412,767
85%	840,265	866,830	845,320	852,925	839,132	840,516	836,121	832,891	818,382
Max	5,804,957	5,806,296	5,797,403	5,798,989	5,795,195	5,779,133	5,737,217	5,775,790	5,736,528

Table G.4.4 - Brazos at Rosharon Flow Statistics Values in acft/month									
Statistic	Scenario 1 - Current	Scenario 2 - 2025 All Return Flow	Scenario 2 - 2025 BRA Return Flow	Scenario 3 - 2025 w CPNPP All Return Flow	Scenario 3 - 2025 w CPNPP BRA Return Flow	Scenario 4 - 2060 All Return Flow	Scenario 4 - 2060 BRA Return Flow	Scenario 5 - 2060 w CPNPP All Return Flow	Scenario 5 - 2060 w CPNPP BRA Return Flow
Min	894	2,347	13	1,944	13	2,347	13	1,944	13
5%	20,978	21,507	17,108	21,743	17,893	21,097	16,876	21,486	17,885
15%	34,378	39,947	33,705	40,357	35,030	35,090	31,812	34,541	32,008
30%	77,231	87,108	84,299	87,154	84,269	84,255	75,839	79,465	72,058
Median	168,852	178,951	171,034	182,184	172,630	166,383	161,383	165,134	161,375
70%	404,911	421,350	413,257	424,017	409,102	407,992	392,563	399,687	385,774
85%	876,747	892,972	879,577	889,153	862,933	871,274	862,647	851,656	830,232
Max	5,986,610	5,983,956	5,972,135	5,980,585	5,973,814	5,949,720	5,905,207	5,946,408	5,904,523

TableG.4.5 -Little River nr Cameron Flow Statistics Values in acft/month									
Statistic	Scenario 1 - Current	Scenario 2 - 2025 All Return Flow	Scenario 2 - 2025 BRA Return Flow	Scenario 3 - 2025 w CPNPP All Return Flow	Scenario 3 - 2025 w CPNPP BRA Return Flow	Scenario 4 - 2060 All Return Flow	Scenario 4 - 2060 BRA Return Flow	Scenario 5 - 2060 w CPNPP All Return Flow	Scenario 5 - 2060 w CPNPP BRA Return Flow
Min	1,112	1,230	1,190	1,230	1,190	1,230	1,190	1,230	1,190
5%	3,930	6,643	5,811	6,596	5,808	6,154	5,516	6,430	5,593
15%	7,491	10,412	9,541	10,022	9,250	8,995	8,259	8,995	8,341
30%	13,038	17,248	16,681	15,548	15,611	15,212	14,351	15,244	14,562
Median	27,480	30,840	30,184	30,048	29,778	27,369	27,172	27,210	26,263
70%	77,975	78,631	76,741	79,073	77,190	71,945	70,747	71,718	70,915
85%	196,571	195,231	193,077	198,746	193,077	187,532	185,853	187,066	186,816
Max	1,410,455	1,412,765	1,411,571	1,412,765	1,411,571	1,409,104	1,407,911	1,409,104	1,408,034

Table G.4.6 -Yegua Creek nr Somerville Flow Statistics Values in acft/month									
Statistic	Scenario 1 - Current	Scenario 2 - 2025 All Return Flow	Scenario 2 - 2025 BRA Return Flow	Scenario 3 - 2025 w CPNPP All Return Flow	Scenario 3 - 2025 w CPNPP BRA Return Flow	Scenario 4 - 2060 All Return Flow	Scenario 4 - 2060 BRA Return Flow	Scenario 5 - 2060 w CPNPP All Return Flow	Scenario 5 - 2060 w CPNPP BRA Return Flow
Min	9	21	0	21	0	21	0	21	0
5%	14	26	0	26	0	26	0	26	0
15%	17	30	1	30	1	30	2	30	2
30%	26	40	12	38	10	39	11	40	12
Median	1,161	2,615	2,377	1,998	1,740	3,733	4,091	4,125	4,094
70%	11,050	11,279	11,302	11,279	11,085	11,590	10,970	11,697	10,925
85%	39,057	39,368	39,173	39,368	38,962	39,300	39,236	39,486	39,381
Max	249,032	249,150	248,991	249,150	248,991	249,088	248,929	249,088	248,929

Table G.4.7 -Navasota River nr Easterly Flow Statistics Values in acft/month									
Statistic	Scenario 1 - Current	Scenario 2 - 2025 All Return Flow	Scenario 2 - 2025 BRA Return Flow	Scenario 3 - 2025 w CPNPP All Return Flow	Scenario 3 - 2025 w CPNPP BRA Return Flow	Scenario 4 - 2060 All Return Flow	Scenario 4 - 2060 BRA Return Flow	Scenario 5 - 2060 w CPNPP All Return Flow	Scenario 5 - 2060 w CPNPP BRA Return Flow
Min	93	0	0	0	0	0	0	0	0
5%	253	315	153	299	153	323	194	323	194
15%	526	519	403	521	403	528	415	528	415
30%	893	882	901	872	899	884	901	881	899
Median	2,186	2,166	2,206	2,142	2,206	2,149	2,206	2,142	2,240
70%	9,268	10,167	8,958	9,890	8,958	9,594	9,084	9,632	9,084
85%	47,790	48,552	47,848	48,552	47,848	48,833	48,129	48,833	48,129
Max	309,403	311,118	308,849	311,118	308,849	311,996	309,729	311,996	309,729